

IN THE CLAIMS:

1-26. (Canceled).

27. (Currently Amended) A method for the continuous, non-invasive measurement of blood pressure based on the principle of the unloaded arterial wall, comprising

positioning a first and a second pressure cuff of identical or comparable size with a first and a second inflatable pressure measuring chamber on at least one first and one second neighboring finger, each containing an artery of identical or comparable size,

controlling pressure in the first pressure measuring chamber in dependence on a measurement signal of a plethysmographic sensor device in such a way that an amplitude of the plethysmographic measurement signal is minimized,

obtaining a pressure measuring signal from the first pressure measurement chamber,

operating the second pressure measuring chamber as a reference pressure chamber independently of the first pressure measuring chamber,

and

controlling the pressure in the reference pressure chamber in dependence on a measurement signal of a second plethysmographic sensor device and in accordance with a preselectable pressure function, a reference signal being obtained simultaneously with the pressure measuring signal, and the reference signal used in the interpretation of

the pressure measuring signal in accordance with a preselectable pressure function and simultaneously with the help of a measurement signal from a second plethysmographic reference device so that an amplitude of an obtained reference signal is minimized while a reference pressure signal is measured, and

analyzing the reference pressure signal, measured at various preselectable pressure values of the pressure function, compared to predetermined ideal pulse curves, and, when the deviation from a given pulse curve is at a minimum, determining the setpoint for the pressure measuring signal therefrom.

28. **(Currently Amended)** Method according to claims 27, 31, 32 or 33 comprising continuously monitoring and/or adjusting a setpoint of the pressure measuring signal by means of the reference signal.

29. **(Canceled)**

30. **(Cancel).**

31. **(Currently Amended)** Method according to claim 27 A method for the continuous, non-invasive measurement of blood pressure based on the principle of the unloaded arterial wall, comprising positioning a first and a second pressure cuff of identical or comparable size with a first and a second inflatable pressure measuring chamber on at least one first and one second neighboring finger, each containing an artery of identical or comparable size,

controlling pressure in the first pressure measuring chamber in dependence on a measurement signal of a plethysmographic sensor

device in such a way that an amplitude of the plethysmographic measurement signal is minimized,

obtaining a pressure measuring signal from the first pressure measurement chamber,

operating the second pressure measuring chamber as a reference pressure chamber independently of the first pressure measuring chamber,

controlling the pressure in the reference pressure chamber in dependence on a measurement signal of a second plethysmographic sensor device and in accordance with a preselectable pressure function, a reference signal being obtained simultaneously with the pressure measuring signal, and the reference signal used in the interpretation of the pressure measuring signal in accordance with a preselectable pressure function and simultaneously with the help of a measurement signal from a second plethysmographic reference device so that an amplitude of an obtained reference signal is minimized while a reference pressure signal is measured,

analyzing the reference pressure signal, measured at various preselectable pressure values of the pressure function, compared to predetermined ideal pulse curves, and, when the deviation from a given pulse curve is at a minimum, determining the setpoint for the pressure measuring signal therefrom, and

comprising—inferring a physiological or pathological change of the pressure measuring signal from a change of the a mean pressure and/or the amplitude of the pressure measuring signal and a shift of the

amplitude maximum of the reference signal or the reference pressure signal in the same direction.

32. **(Currently Amended)** ~~Method according to claim 27 A~~  
method for the continuous, non-invasive measurement of blood pressure based on the principle of the unloaded arterial wall, comprising

positioning a first and a second pressure cuff of identical or comparable size with a first and a second inflatable pressure measuring chamber on at least one first and one second neighboring finger, each containing an artery of identical or comparable size,

controlling pressure in the first pressure measuring chamber in dependence on a measurement signal of a plethysmographic sensor device in such a way that an amplitude of the plethysmographic measurement signal is minimized,

obtaining a pressure measuring signal from the first pressure measurement chamber,

operating the second pressure measuring chamber as a reference pressure chamber independently of the first pressure measuring chamber,

controlling the pressure in the reference pressure chamber in dependence on a measurement signal of a second plethysmographic sensor device and in accordance with a preselectable pressure function, a reference signal being obtained simultaneously with the pressure measuring signal, and the reference signal used in the interpretation of the pressure measuring signal in accordance with a preselectable pressure function and simultaneously with the help of a measurement signal from a

second plethysmographic reference device so that an amplitude of an obtained reference signal is minimized while a reference pressure signal is measured,

analyzing the reference pressure signal, measured at various pre-selectable pressure values of the pressure function, compared to predetermined ideal pulse curves, and, when the deviation from a given pulse curve is at a minimum, determining the setpoint for the pressure measuring signal therefrom, and

comprising inferring a loss of setpoint of the pressure signal from a change of the mean pressure and/or the amplitude of the pressure measuring signal and an absent or oppositely directed shift of the amplitude maximum of the reference signal or the reference pressure signal.

33. **(Currently Amended)** ~~Method according to claim 27 A~~  
method for the continuous, non-invasive measurement of blood pressure based on the principle of the unloaded arterial wall, comprising

positioning a first and a second pressure cuff of identical or comparable size with a first and a second inflatable pressure measuring chamber on at least one first and one second neighboring finger, each containing an artery of identical or comparable size,

controlling pressure in the first pressure measuring chamber in dependence on a measurement signal of a plethysmographic sensor device in such a way that an amplitude of the plethysmographic measurement signal is minimized,

obtaining a pressure measuring signal from the first pressure measurement chamber,

operating the second pressure measuring chamber as a reference pressure chamber independently of the first pressure measuring chamber,

controlling the pressure in the reference pressure chamber in dependence on a measurement signal of a second plethysmographic sensor device and in accordance with a preselectable pressure function, a reference signal being obtained simultaneously with the pressure measuring signal, and the reference signal used in the interpretation of the pressure measuring signal in accordance with a preselectable pressure function and simultaneously with the help of a measurement signal from a second plethysmographic reference device so that an amplitude of an obtained reference signal is minimized while a reference pressure signal is measured,

analyzing the reference pressure signal, measured at various preselectable pressure values of the pressure function, compared to predetermined ideal pulse curves, and, when the deviation from a given pulse curve is at a minimum, determining the setpoint for the pressure measuring signal therefrom, and

wherein at preselectable time intervals or triggered by loss of setpoint the reference pressure chamber is operated as pressure measuring chamber and the pressure measuring chamber as reference pressure chamber.

34. **(Canceled)**

35. **(Cancel)**

36. **(Canceled)**

37.-40. **(Cancel)**